***Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ P: \_\_\_\_\_\_\_***

CW #29

Find the Perimeter and Area of Complex Figures

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**MEA 601** – Use relationships involving area, perimeter, and volume of geometric figures to compute another measure.

# Objective(s):

4.1 Given perimeter/side lengths of a geometric figure, find the perimeter/side lengths of another geometric figure.

4.2 Given the area of a figure, find the new dimensions of an increase/decreased area.

Independent Reflection Questions (To be written in notebooks)

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| 1) Two sides of the rectangle PQRS are 4 units shorter than the two other sides. If the perimeter is 40 units, what are is the length and width of the rectangle. | 2) *Explain* how you would find the side length of a square if its perimeter is equal to the circumference of a circle whose radius is 8 inches. |

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| **Example 1:**  Jesus has 400 feet of fence for a rectangular backyard play area for his dog. What is the largest area Jesus can have for his dog’s play area? | **Practice 1:**  Daisy plans to build a pen for her pet rabbit. What is the area of the largest rectangular pen that she can make with 28 feet of fencing? |
| **Example 2:**  A farmer who owned a 20-yard-by-40-yard plot of land purchased more property such that the area doubled. The 40-yard length of the plot increased by 10 yards. How much must the 20-yard width have increased? | **Practice 2:**  An outdoor pool is 15-feet-by-10-feet. The owners want to double the size of the pool, extending the previous 10-foot width by 2 feet. How many feet will the length of the pool extend? |

1. **Perimeter/Side of Geometric Figure** 🡪 **Other Geometric Figure**

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| **Example 4:**  A square and a semicircular region have the same perimeter. If the length of the radius of the semicircular region is 8, what is the length of one side of the square?  Exact answer: Approximate answer: | **Practice 4:**  A square and a semicircular region have the same perimeter. If the length of the radius of the semicircular region is 16, what is the length of one side of the square?  Exact answer: Approximate answer: |
| **Example 5:**  A square and a semicircular region have the same perimeter. If the perimeter of the square is 16 in, what is the length of the radius of the circle?  Exact answer: Approximate answer: | **Practice 5:**  A square and a semicircular region have the same perimeter. If the perimeter of the square is 20 in, what is the length of the radius of the circle?  Exact answer: Approximate answer: |
| **Example 5:**  The diameter of a circle and the hypotenuse of an isosceles right triangle have the same length. What is the circumference of the circle if the length of one of the legs of the isosceles right triangle is 7 in.  Exact answer: Approximate answer: | **Practice 5:**  The circumference of a circle and the perimeter of an equilateral triangle are the same. If the radius of the circle is 4 cm, what is the length of the side of the triangle?  Exact answer: Approximate answer: |

**Independent Practice**

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| 1) What is a maximized area of a quadrilateral with a fixed perimeter of 24 units? | 2) The short leg in a 30-60-90 has the same length as one side of a square. If the long leg is 6 ft long, what is the area of the square? |
| 3) A square and a circle share have the same perimeter. If the length of the diameter of the circle is 12 inches, what is the length of one of the sides of the square? Give an exact and approximate answer. | 4) The circumference of a circle and the perimeter of an equilateral triangle are the same. If the diameter of the circle is 10 cm, what is the length of the side of the triangle? Give an exact and approximate answer. |
| 5) After remodeling, a square bedroom in a house is going to double in size. If the bedroom’s perimeter is initially 40 feet, what will the new area of the bedroom be? | 6) A plot of land is 6-acres-by-4-acres. With new ownership, this plot of land is set to increase by 4 times. If the 6-acre side of the plot increased by 2 acres, by how much did the 4-acre side increase? |
| 9) A square and a right triangle share the same perimeter. The right triangle has a 26 cm hypotenuse and a 10 cm leg. What is the length of one of one side of the square? | 10) A rectangle and a square have the same perimeter. If one side of the square is 6 inches, and the length of the rectangle is 4 inches, what is the width of the rectangle? |